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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/819,457	03/28/2001	David J. Alcoe	END920000189US1	3434

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EXAMINER

MITCHELL, JAMES M

ART UNIT

PAPER NUMBER

2827

DATE MAILED: 03/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/819,457

Applicant(s)

ALCOE ET AL.

Examiner

James Mitchell

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 15 November 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-4, 8-13, 19 and 21-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Kiani et al. (US 6,388,208).

Kiani et al. (Fig 1A) discloses: an electronic structure, comprising: an internally circuitized substrate (28; via 3<sup>rd</sup> and 4<sup>th</sup> from bottom) having a metallic plane (12') on a first surface of the substrate; and a redistribution structure having N dielectric layers (28) denoted as dielectric layers 1, 2, ..., N, N metal planes (12') denoted as metal planes 1, 2, ..., N, and a microvia structure (22) through the N dielectric layers, wherein N is at least 2, wherein dielectric layer I is on the first surface of the substrate and on the metallic plane, wherein metal plane J (12') is on dielectric layer J (5<sup>th</sup> from bottom) for J = 1, 2, ..., N, wherein dielectric layer I is on dielectric layer 1-1 (J layer) and on metal plane I-1 (J) for I = 2, ..., N, and wherein the microvia structure electrically couples metal plane N to the metallic plane; wherein the microvia structure includes N microvias denoted as microvias 1, 2, ..., wherein the microvia K (22) passes through dielectric layer K for K = 1, 2, ... N, wherein metal plane N is electrically coupled to

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microvia N, wherein metal plane J-1 electrically couples microvia J to microvia 1-1 for J = 2, 3, ..., N, and wherein microvia1 is electrically coupled to the metallic plane; and the microvia structure includes a microvia that passes through the N dielectric layers, wherein the microvia electrically couples metal plane N to the metallic plane; the microvia structure includes a first microvia, wherein the first microvia passes through dielectric layers M (28 ) through N (28), wherein M is at least 2, wherein N is at least 3, wherein M is less than N, and wherein metal plane N is electrically coupled to the first microvia; wherein the PCB (10) inherently comprises a signal plane, power plane and ground plane; and a plated through hole, PTH (19) passes the substrate and wherein the metallic plane is electrically coupled to the PTH; and a metallic plane (12') on the second surface of the substrate (2<sup>nd</sup> layer 12' from the bottom) with a card circuit board (not labeled) coupled to the second metallic plane (Fig 22); and dielectric layers each include a an inherent dielectric material having a stiffness of at least about 700,000 psi, the glass temperature is about 150 and the CTE is no more than 50 ppm/° C.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kiani et al. as applied to claim 1 and 4.

Kiani does not appear to explicitly disclose a second microvia that passes through dielectric layers I through M-1, wherein the microvia structure further includes a second microvia, wherein metal plane M-1 electrically couples the first microvia to the second microvia, and wherein the second microvia is electrically coupled to the metallic plane, or that the microvia structure further includes M-1 second microvias denoted as second microvias, 1, 2,..., M-1, and wherein the second microvia K passes through dielectric layer K for K = 1, 2, ..., M-1, wherein the metal plane M-1 electrically couples the first microvia to second microvia M-1, wherein if  $M > 2$  then metal plane J-1 electrically couples second microvia J to second microvia J-1 for J = 2, 3, ... M-1, and wherein second microvia I is electrically coupled to the metallic plane.

However Kiani discloses the claimed invention except for a second via. It would have been obvious to one of ordinary skill in the art at the time the invention was made to form a second via, because it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8 (CA7).

Claims 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kiani as applied to claim 1 in combination with Applicant's Admitted Prior Art (APA).

Kiani further discloses a signal line inherently between the power and ground (via PCB; likewise shown in applicant's admitted prior art), but does not appear to disclose that the dielectric material is PTFE having silicon particles.

APA discloses that PTFE having silicon particles for dielectric are known in the art (applicant spec. Page 4, Lines 5-7), it would have been obvious to one of ordinary

skill in the art to utilize PTFE having silicon particles with the board of Kiani in order to provide a dielectric material as admitted by applicant PTFE (applicant spec. Page 4, Lines 5-7).

Claims 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kiani et al. as applied to claim 1 and further in combination with Suzuki.

Kiani further discloses a semiconductor electronic structure mounted on the board (Col.2, Lines 36) that inherently includes at least one power plane that is a predetermined minimum distance value, but does not disclose an electronic structure electrically coupled to a Metal plane by a solder member.

Suzuki (Fig 5) utilizes solder contact. It would have been obvious to one of ordinary skill in the art to use a solder member on the metal plane in order to make a connection as taught by Suzuki (par. 0004).

Although neither Kiani et al nor Suzuki appear to explicitly teach the process limitations of "predetermined by requirements of a given radio frequency application," the product of Kiani and Suzuki inherently possesses the structural characteristics imparted by the process limitation. See *In re Fitzgerald, Sanders, and Bagheri*, 205 USPQ 594 (CCPA 1980).

### ***Conclusion***


Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Mitchell whose telephone number is (703) 305-0244. The examiner can normally be reached on M-F 10:30-8:00.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on (703) 305-9883. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3432 for regular communications and (703) 305-3230 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

  
Jmm  
March 12, 2003



DAVID E. GRAYBILL  
PRIMARY EXAMINER